

Panel: Vendors' Experiences in U.S. EPA's Environmental Technology Verification (ETV) Program

#253

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ABSTRACT

Representatives of the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification Program (ETV), Battelle, EPA's partner for the Advanced Monitoring Systems (AMS) pilot, and vendors of environmental technologies will participate in a panel discussion of EPA's ETV Program. The purpose of ETV, which was established in 1995, is to accelerate the development and commercialization of improved environmental technologies through third-party verification testing and reporting on the tested technologies' performance. EPA and Battelle representatives will provide an update about ETV and the process being followed to conduct verification testing of environmental technologies submitted by vendors. Vendors from several companies that have successfully completed verification testing will: (1) describe their technologies; (2) explain their functions; (3) describe conditions under which they were tested; (4) summarize the performance data obtained during the test; and (5) discuss the value to their companies of having ETV verification of their technologies. This will be an interactive session and questions from the audience will be welcome.

INTRODUCTION

Since its inception, the U.S. EPA has evaluated technologies to determine their effectiveness in preventing, controlling, and cleaning up pollution. In the early 1990s, however, many government and private interest groups determined that a full-scale program was needed to produce independent, credible data on the performance of technologies to accelerate their acceptance by permitting officials and to facilitate their use by technology buyers.

In October 1995, EPA began the implementation of the Environmental Technology Verification (ETV) program. The goal of ETV is to verify the performance of commercially ready environmental technologies through the evaluation of objective and quality assured data. These data are obtained during verification tests performed by independent third parties following quality assured methods. Thus potential technology purchasers and permittees are provided with an independent and credible assessment of the technologies they are buying or permitting.

ETV'S PILOTS

ETV has contracted with "verification partners" to oversee and conduct 12 pilots under the ETV program. The partners include companies, private research organizations, and government laboratories. Each pilot has a defined scope of technologies to be tested and is overseen by a designated EPA representative. The 12 pilots and EPA's verification partners are:

- Advanced Monitoring Systems, Battelle
- Air Pollution Control Technology, Research Triangle Institute (RTI)
- Drinking Water Systems, NSF International
- EvTEC, Civil Engineering Research Foundation (CERF)
- Greenhouse Gas Technology, Southern Research Institute (SRI)
- Indoor Air Products, RTI
- Pollution Prevention (P2), Recycling & Waste Treatment Systems, California EPA
- P2 Innovative Coatings & Coating Equipment, Concurrent Technologies Corp. (CTC)
- P2 Metal Finishing Technologies, CTC
- Site Characterization and Monitoring Technologies, Oak Ridge and Sandia National Laboratories
- Source Water Quality Protection Technologies, NSF International
- Wet Weather Flow Technologies, NSF International.

Pilots use the following general process for verification: (1) establish multi-perspective stakeholder groups to guide pilot decision making; (2) identify technology needs and technology innovations with help from stakeholders; (3) identify and invite vendors to submit technologies for verification; (4) prepare and obtain review of a verification test/quality assurance (QA) plan; (5) conduct the verification test; (6) prepare a

verification report and statement; and (7) submit the report and statement for review to participating vendors, EPA, and other peer reviewers. The final step is to publish the verification report and statement, which are issued jointly by EPA and the verification partner. The verification statement is signed by senior officials of EPA and the verification partner. Copies of test/QA plans, verification reports and statements, and other information are available on the ETV website: <http://www.epa.gov/etv/library.htm>.

STAKEHOLDER CONTRIBUTIONS

Pilots are encouraged to organize stakeholder committees to assist in identifying and prioritizing environmental technology needs. Stakeholders serve without compensation and are selected to represent broad perspectives on each pilot's plans. Stakeholder committees typically include regulators and representatives of regulated communities, technology users, professional and trade associations, environmental groups, financial/investment organizations, and consulting engineers.

Contributions of stakeholder committees may also include reviewing key pilot documents, including protocols, test/quality assurance plans, and verification reports. Stakeholders attend regular committee meetings to consider additional technologies for testing, review the pilot's process, and provide suggestions on improving or expediting technical or outreach methods. For example, they may identify key vendors of technologies sought by the specific pilot, suggest media outlets most likely to be seen by vendors, or recommend conferences or trade shows.

As of January 2000, there were 837 stakeholders in 16 ETV pilot committees and 72 stakeholder meetings had been held. The following examples illustrate the diverse perspectives represented on the stakeholder committees:

Vendors and developers: Herman Miller, Inc.; Institute of Clean Air Companies; KCH Services, Inc.; Knoll, Inc.; PPG Industries.

Buyers and users: American Electric Power Co., Inc.; Amoco Corp.; ARCO Technology; Ashland Chemical Co.; CH2M Hill; Eaton Corporation; Department of the Army/Chemical Demilitarization; DuPont; Enron Gas Pipeline Company; Exxon Research & Engineering; General Services Administration; Monsanto; Owens Corning; Tinker AFB, OK; United Airlines; United Technologies-Pratt & Whitney.

Technical associations: Air and Waste Management Association; American Automobile Manufacturers Association; American Society of Mechanical Engineers; Business Council for Sustainable Energy; Chemical Manufacturers Association; National Association of Manufacturers; National Council of Air and Stream Improvement; National Groundwater Association, Water Quality Association.

Environmental groups: American Lung Association; National Audubon Society; River Watch Network.

Federal agencies: U.S. Army Corps of Engineers; U.S. Department of Commerce; U.S. Department of Energy; U.S. Department of Defense; U.S. State Department-Climate Change Division.

Regional, state, local agencies: California Air Resources Board; Chicago Water Reclamation District; Mid-Atlantic Regional Air Management Association; New England Environmental Business Council; New Jersey Department of Environmental Protection; New York State Department of Environmental Conservation; North Carolina Department of Environment and Natural Resources; South Coast Air Quality Management District (CA); Tennessee Valley Authority.

Research, academic institutions: American Petroleum Institute; Desert Research Institute; Electric Power Research Institute; Gas Research Institute; San Francisco Estuary Institute; University of Denver; University of Nebraska.

Venture capital groups: Centere Financial Products; Verdigris Capital; World Bank's Global Environment Facility; Zurich American Specialties.

TECHNOLOGIES IN VERIFICATION

As of January 2000, 57 technologies had been verified under the ETV program. Examples of verified technologies include:

- Portable NO/NO₂ emission analyzers
- On-line turbidimeters
- Paint overspray arrestors
- High volume, low pressure spray guns
- Portable gas chromatograph-mass spectrometers
- PCB field analyzers
- Soil/soil gas samplers
- Emulsified fuels
- Well-head monitoring technologies.

An additional 105 technologies were in the process of being tested as of January 2000 and approximately 170 applications had been received to participate in future verification tests. Examples of technologies currently undergoing testing include:

- Optical open-path monitors

- Ambient fine particulate monitors
- PCB field analytical technologies
- Landfill gas control systems
- Equipment for physical chemical and biological removal of nitrate
- Microbiological contaminants and particulate reduction by physical processes
- Ultra urban storm water management devices.

EPA expects that 300 technologies will be verified by ETV within the first decade of the program. As of January 2000, final versions of major test-related documents had been issued, including 35 Protocols, 47 technology-specific test/QA plans, and 57 verification reports and verification statements. These documents are available on the ETV website (<http://www.epa.gov/etv>).

EPA-DoD COLLABORATION

In July 1999, EPA/ETV and DoD's Environmental Security Technology Certification Program (ESTCP) signed a memorandum of agreement to collaborate on joint technology verification efforts. The agreement will expedite the verification of environmental technologies used by both DoD and non-DoD facilities. The agreement is expected to provide benefits to both EPA and DoD as well as to technology developers, vendors, and users. Benefits would include efficiencies in conducting technology demonstrations and verification tests, more cost-effective use of each agency's capabilities for testing and verification, joint reporting on performance of technologies, and broader acceptance for newly verified technologies.

ETV OUTREACH

The ETV program maintains an active outreach program to provide information to groups, companies, and the public about ETV's objectives, progress, and outputs. This outreach program especially targets technology buyers and users to increase market awareness of each tested technology's performance.

The major communications tool is the ETV website (<http://www.epa.gov/etv>), which now contains more than 200,000 pages. In November 1999, the site topped 21,000 hits per month, including many from international viewers. The web pages provide access to general information about ETV and each of its pilots, including fact sheets, pilot newsletters, articles about ETV, announcements, summaries of each pilot's activities, verification test plans and schedules, verification reports and statements, schedules, lists of stakeholders, and summaries of stakeholder committee meetings.

Timely updates are provided to nearly 1,500 subscribers by ETVoice, the program's listserv newsletter. Monthly issues inform people about new information related to

technology testing procedures and results, upcoming testing opportunities, completion of tests, news of meetings, technical conferences involving ETV program representatives, and exhibits where the ETV booth is scheduled.

Additional outreach activities include informational brochures, pilot newsletters sent to specialized mailing lists, news releases to technology-oriented news outlets, fact sheets, and support for regional and state agency participation at conferences and activities. All printed materials, including verification reports and statements, can also be downloaded from the ETV website.

CONCLUSIONS

The ETV program plans to continue its successful activities. In less than five years, the program has contracted with verification partners to operate 12 pilots and developed the process pilots can use to complete their technology verification missions. Nearly all pilots have organized active stakeholder committees whose members bring diverse ideas and perspectives to the pilots' decision processes. Outreach activities and public information materials are provided by ETV and its pilots. The ETV website is drawing more than 20,000 hits each month, a measure of interest in the program.

Participating vendors have responded favorably to the ETV program, as indicated by the following vendors' reactions:

- "We view the program as an exceptional tool for providing...vendors such as ourselves the opportunity to rapidly launch a new product into the market place..."
- "The...issuance of verification reports offers to end users a valuable tool to use in their evaluation and selection of technology equipment."
- "You'll have objective, credible, EPA quality-assured performance data for potential buyers..."
- "[Your technology] will have greater acceptance by state and local agencies."
- "[Tests are] widely publicized in ETV web pages, publications, and trade show exhibits."
- "[Your] competitive playing field [can be] leveled."
- "New international [as well as national] markets can open to you."
- "Investors can have added confidence in your technology"
- "When it comes to making technology purchasing decisions, ETV is the best tie-breaker around."

